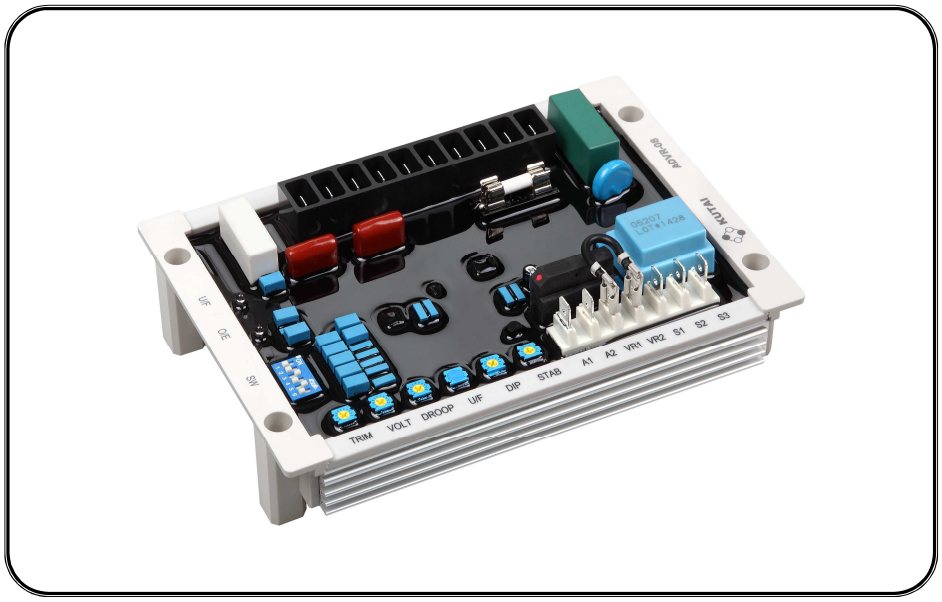
ADVR-08

Universal Hybrid Analog-Digital Voltage Regulator Operation Manual



An Universal Hybrid Analog/Digital 2 lines sensing 8 Amp AVR with multiple power input capability such as Full Harmonic (Compound Windings), Harmonic + Auxiliary Winding, PMG and SHUNT.

Compatible with Leroy Somer* R438, R448, R449 and more.
Use with KUTAI IVT-1260/IVT-2460 add-on module can boost generator motor starting capacity.

* Use for reference purpose only and do not imply that any part listed above is the product of the manufacturer.

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SECTION 1 : SPECIFICATION

Sensing Input (E1, E2)

Voltage	110 – 480 Vac 1 phase
	90 – 130 Vac @ 110 Vac
	180 – 260 Vac @ 220 Vac
	340 – 520 Vac @ 380 Vac
Frequency	50/60 Hz selectable

Power Input (X1, X2)

Voltage	40 – 300 Vac, 1 phase
Frequency	50 – 500 Hz

Auxiliary Input (Aux1, Aux2)

Voltage	40 – 300 Vac, 1 phase
Frequency	50 – 500 Hz

Output (F+, F-)

Voltage	Max. 63 Vdc @power input 110 Vac
	Max. 125 Vdc @power input 220 Vac
Current	Continuous 8A
	Intermittent 12A for 10 sec.
Resistance	≧ 8 ohms @ power input 110 Vac
	≧ 16 ohms @ power input 220 Vac
Fuse Spec.	5 x 20mm S505-10A (slow blow type)

Burden in SHUNT & PMG Wiring

880 VA @ power input 110 Vac
1760 VA @ power input 220 Vac

Voltage Regulation

< +/- 0.5% (with 4% engine governing)

Typical System Response

AVR response 20 ms

Build Up Voltage

Residual voltage at AVR power input terminal
> 6 Vac @ 25 Hz

Voltage Thermal Drift

0.03% per ˚C change in AVR ambient

External Volts Adjustment (VR1, VR2)

+/- 4% 500 ohms 1 watt potentiometer
+/- 8% 1K ohms 1 watt potentiometer

Soft Start Ramp Time

4 sec.

Over Excitation Protection

Inverse-time 170 +/- 5 Vdc @ power input 220 Vac

Unit Power Dissipation

Max.6 watts

EMI Suppression

Internal EMI filtering

Quadrature Droop Input (S1, S2, S3)

CT 5A (S1-S2) or 1A (S2-S3) > 5VA
Max. +/- 5% @ P.F +/- 0.7

Analogue Input (A1, A2)

Maximum input +/- 5 Vdc
Sensitivity +/- 25% Generator Volts (adjustable)
Input resistance > 2K ohms

Under Frequency Protection (Factory Knee Point Setting)

50 Hz system presets knee point at 47 Hz
60 Hz system presets knee point at 57 Hz
Knee point Frequency Drift：0.1 Hz @ -40 – +70 ˚C

Environment

Operation Temperature	-40 – +70 ˚C
Storage Temperature	-40 – +85 ˚C
Relative Humidity	Max. 95%
Vibration	3 Gs @ 100 – 2K Hz

Dimensions

171.0 (L) x 120.0 (W) x 50.0 (H) mm

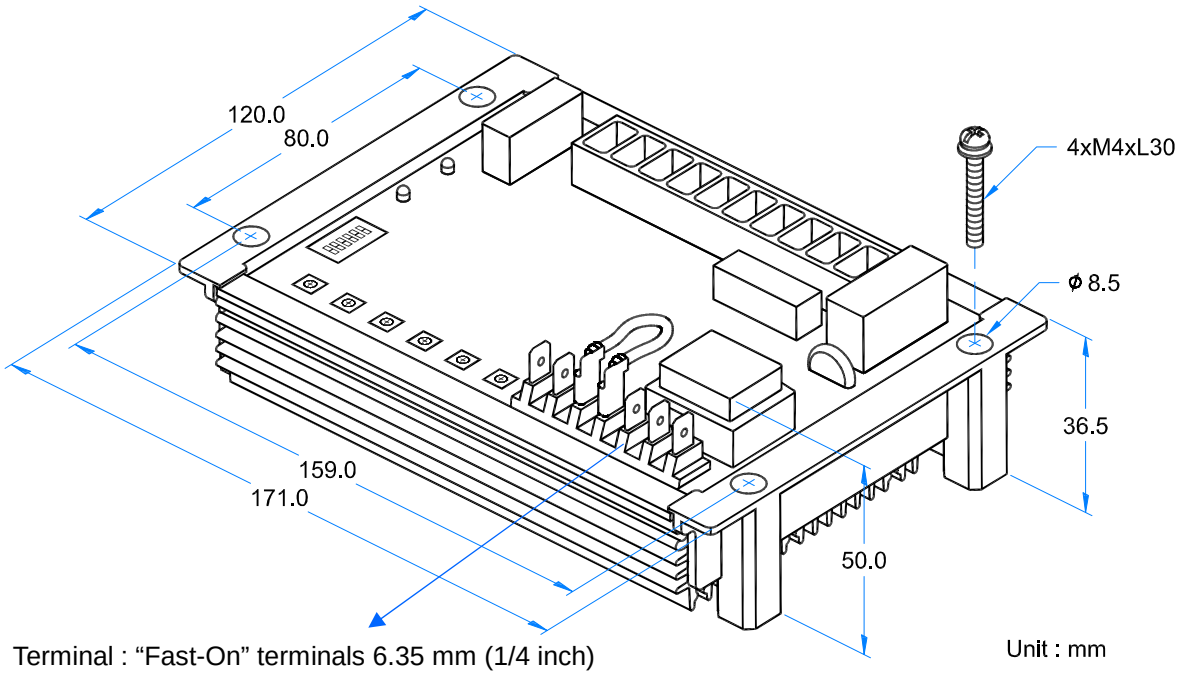
Weight

820 g +/- 2%

ATTENTION

Carefully set the AVR sensing voltage from 110 to 480 Vac using DIP Switch SW 4 & 5.

SECTION 2 : OUTLINE / SIZE / INSTALLATION REFERENCE



Terminal : “Fast-On” terminals 6.35 mm (1/4 inch)

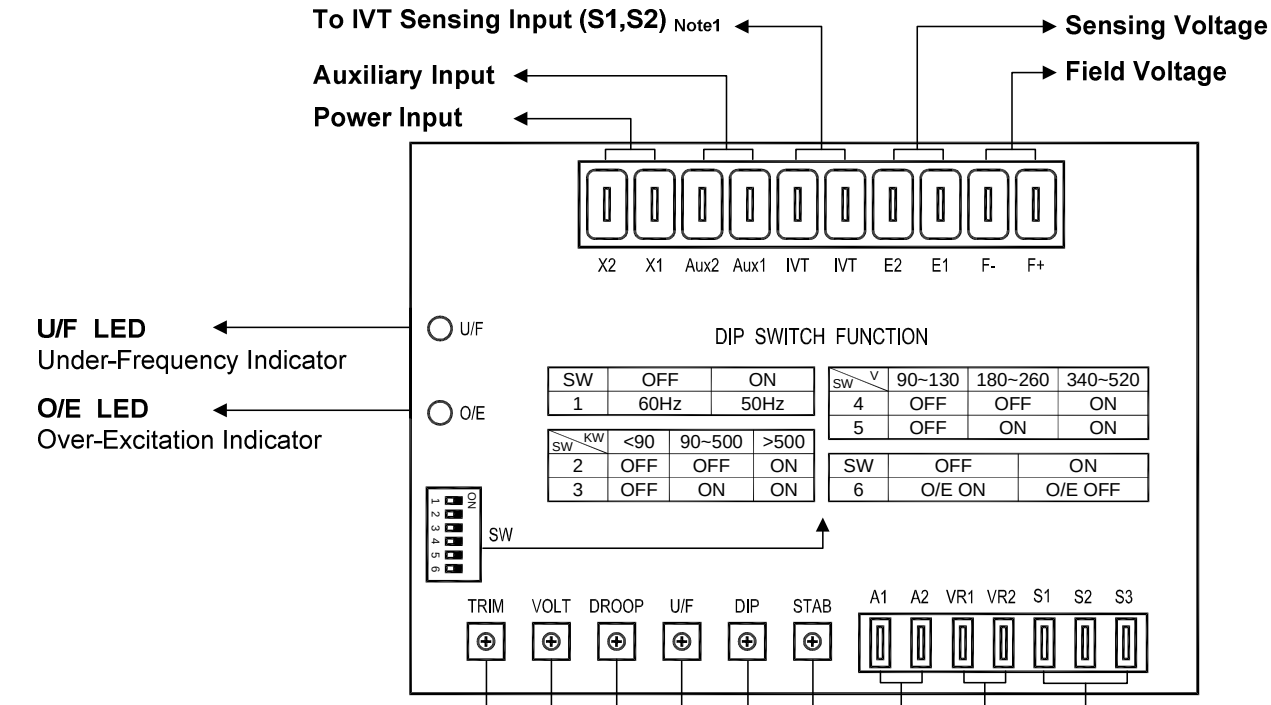
Flag Terminal (“Fast-On” terminal)

Figure 1 Outline Drawing

ATTENTION

Meggers and high-potential test equipment must not be used as it could damage the AVR.

SECTION 3 : DIP SWITCH PROGRAMMING & ADJUSTMENTS



TRIM Adjustment (for paralleling)
Set fully clockwise for 10% output voltage change via analog (Bias) input A1 & A2.

Set fully counter-clockwise no effect on output voltage.(Used only in paralleling)

Quadrature Droop Input (for paralleling)
5A CT (S1-S2)
1A CT (S2-S3)

External VR
(Shorted when not in use)

Analogue Input (See TRIM)
Used for PF control when paralleling

VOLT Voltage Adjustment
According to DIP switch setting SW 4 & 5

DROOP
Current Compensation Droop Adjustment
Used only in paralleling

STAB Stability Adjustment
Set under no load operation, adjust STAB potentiometer counter-clockwise until the voltage becomes unstable and turn back 1/5 turn.

U/F UFRO Adjustment
Under Frequency knee point setting
50 Hz System : 40 to 51 Hz (Lowest position)
60 Hz System : 50 to 61 Hz (Lowest position)

DIP Adjustment
This adjustment allows some control over the generator voltage dip when applying load.

It is typically used to compensate for turbo lag, leaving the generator to operate below the UFRO knee point setting. The voltage droop ratio can be set using the DIP adjustment.

The range is 10 to 3 V/Hz.

NOTE

For more detail about " IVT Generator Auxiliary Excitation Booster " please visit KUTAI website.

SECTION 4 : WIRING CONNECTIONS

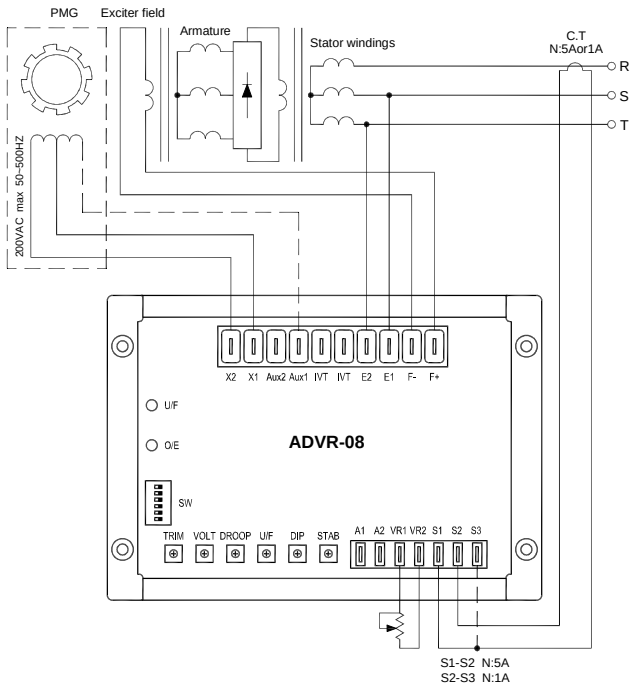


Figure 2 Single & Three Phase PMG

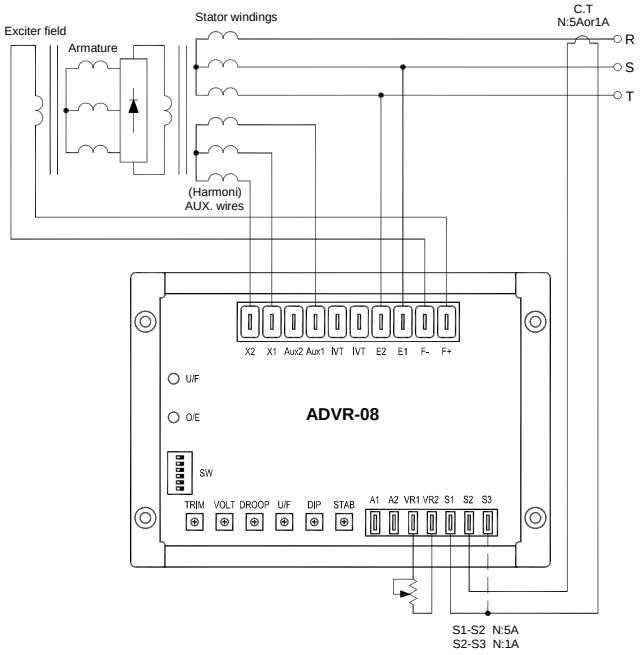


Figure 3 Three Phase Auxiliary Winding (Full Harmonic)

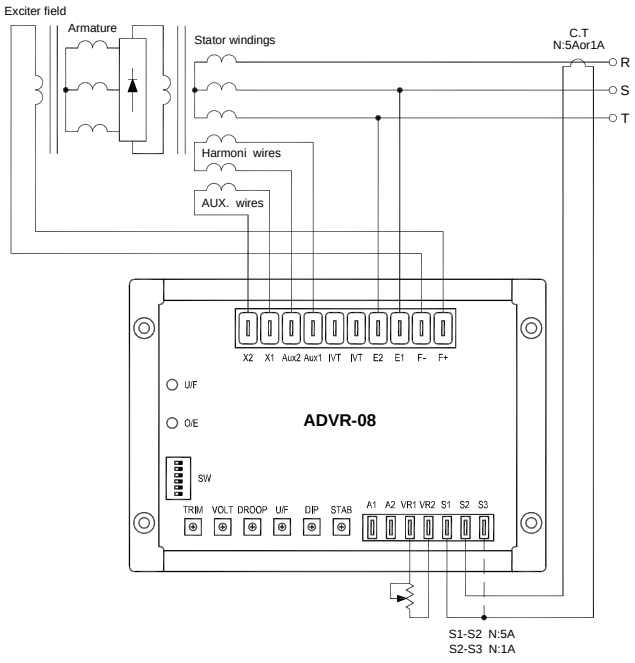


Figure 4 Auxiliary & Harmonic

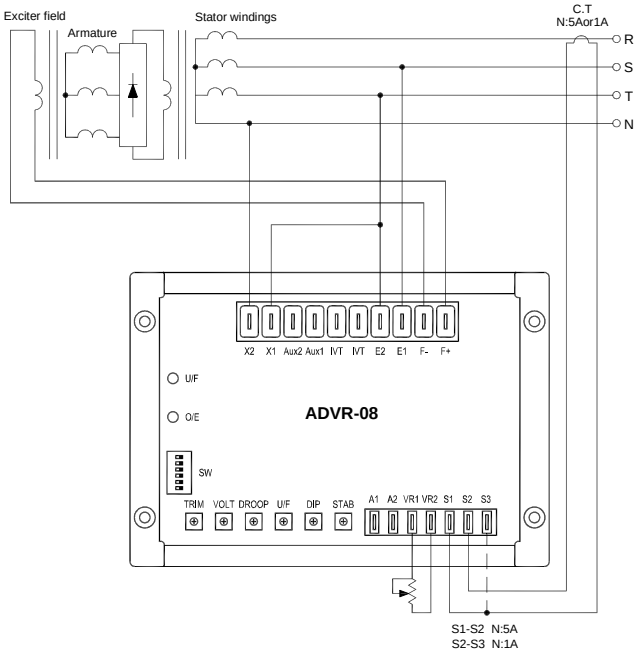


Figure 5 Self-Excited (SHUNT)

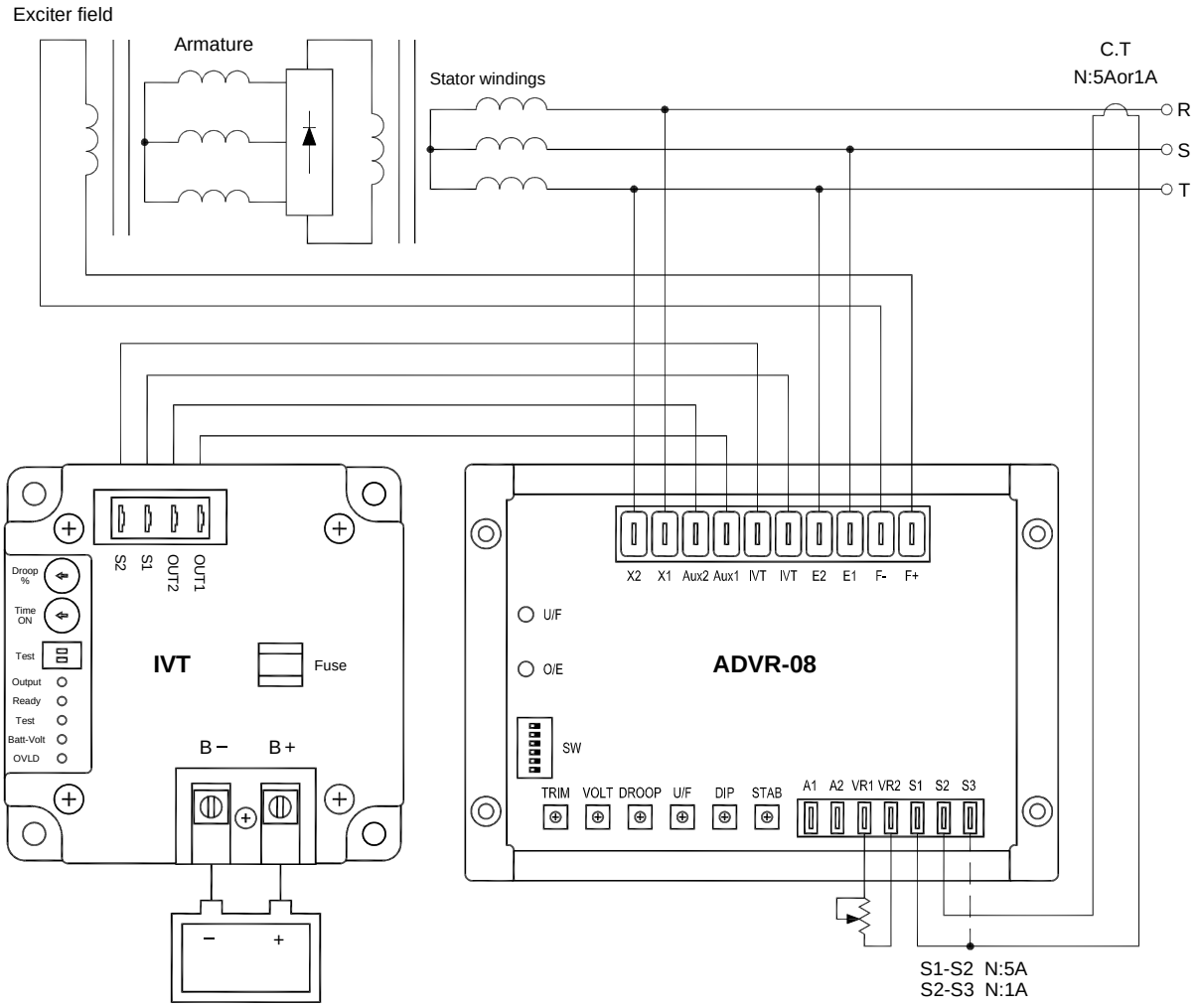


Figure 6 ADVR-08 with IVT-1260 / IVT-2460

ATTENTION

1. **All AC voltage readings are average value only.**
2. **Use a remote 500 ohms 1 watt external VR for +/- 4% adjustment range. (keep shorted if not used)**
3. **Use a remote 1K ohms 1 watt external VR for +/- 8% adjustment range.**
4. **If your PMG is not working you can also power the AVR in shunt using terminals X1 & X2 connected to the output of the generator as long as it's less than 300 Vac.**

※ Use only the replacement fuses specified in this user manual.

※ Appearance and specifications of products are subject to change for improvement without prior notice.